MOD S5.496 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 12.5 - 12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those mentioned in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries mentioned in this footnote. The power flux-density limit at the Earth's surface given in Article **S21**, Table [AR28] for the fixed-satellite service shall apply on the territory of the countries mentioned in this footnote.

GHz
12.75 – 14.3

Allocation to Services		
Region 1	Region 2	Region 3
12.75 – 13.25	FIXED FIXED-SATELLITE (Earth-to-space) S5.441 MOBILE Space Research (deep space) (space-to-Earth)	
13.25 – 13.4	AERONAUTICAL RADIONAVIGATION S5.497 S5.498 S5.499	
13.4 – 13.75	RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research S5.333 S5.499 S5.500 S5.501	
13.75 – 14	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research S5.333 S5.499 S5.500 S5.501 S5.502 S5.503 S5.503A	
14 – 14.25	FIXED-SATELLITE (Earth-to-space) S5.506 RADIONAVIGATION S5.504 Land mobile-satellite (Earth-to-space) Space Research S5.505	
14.25 – 14.3	FIXED-SATELLITE (Earth-to-space) S5.506 RADIONAVIGATION S5.504 Land mobile-satellite (Earth-to-space) Space Research S5.505 S5.508 S5.509	

(MOD) (MOD) (MOD) (MOD) (MOD) (MOD)

NOC **S5.497** The use of the band 13.25 - 13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.

MOD **S5.498** The band 13.25 - 13.4 GHz may also be used in the space research service (Earth-to-space) on a secondary basis, subject to agreement obtained under No. **S9.21**.

NOC **S5.499** *Additional allocation:* in Bangladesh, India and Pakistan, the band 13.25 - 14 GHz is also allocated to the fixed service on a primary basis.

MOD **S5.500** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Madagascar, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sudan, Chad and Tunisia, the band 13.4 - 14 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD **S5.501** *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Japan, Kazakhstan, Moldova, Mongolia, Kyrgyzstan, Romania, the United Kingdom, Russia, Tajikistan, Turkmenistan and Ukraine, the band 13.4 - 14 GHz is also allocated to the radionavigation service on a primary basis.

MOD **S5.502** In the band 13.75 - 14 GHz, the e.i.r.p. of any emission from an earth station in the fixed-satellite service shall be at least 68 dBW, and should not exceed 85 dBW, with a minimum antenna diameter of 4.5 metres. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services towards the geostationary-satellite orbit shall not exceed 59 dBW.

MOD **S5.503** In the band 13.75 - 14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. The e.i.r.p. density of emissions from any earth station in the fixed-satellite service shall not exceed 71 dBW per 6 MHz in the frequency range 13.772 - 13.778 GHz until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band. Automatic power control may be used to increase the e.i.r.p. density above 71 dBW per 6 MHz in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use of 71 dBW per 6 MHz e.i.r.p. in clear sky conditions.

ADD S5.503A Until 1 January 2000, stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services. After that date, these non-geostationary space stations will operate on a secondary basis in relation to the fixed-satellite service. Additionally, when planning earth stations in the fixed-satellite service to be brought into service between 1 January 2000 and 1 January 2001, in order to accommodate the needs of spaceborne precipitation radars operating in the band 13.793 - 13.805 GHz, advantage should be taken of the consultation process and the information given in Recommendation ITU-R SA.1071.

NOC **S5.504** The use of the band 14 - 14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service (see Recommendation **708**).

MOD **S5.505** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Malawi, Mali, Morocco, Mauritania, Niger, Oman, Pakistan, the Philippines, Qatar, Syria, the Democratic People's Republic of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

NOC **S5.506** The band 14 - 14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.

SUP **S5.507**

MOD **S5.508** *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, Denmark, Spain, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Luxembourg, Norway, Portugal, the United Kingdom, Slovenia, Switzerland, Turkey and Yugoslavia, the band 14.25 - 14.3 GHz is also allocated to the fixed service on a primary basis.

MOD **S5.509** *Additional allocation:* in Japan and Pakistan the band 14.25 - 14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis.

GHz
14.3 – 15.35

	Allocation to Services		
	Region 1	Region 2	Region 3
	14.3 – 14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile	**14.3 – 14.4** FIXED-SATELLITE (Earth-to-space) S5.506 Radionavigation-Satellite Land mobile-satellite (Earth-to-space)	**14.3 – 14.4** FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile
(MOD)	Land mobile-satellite (Earth-to-space) Radionavigation-Satellite		Land mobile-satellite (Earth-to-space) Radionavigation-Satellite
(MOD)			
	14.4 – 14.47	FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile	
(MOD)		Land mobile-satellite (Earth-to-space)	
		Space Research (space-to-Earth)	
(MOD)			
	14.47 – 14.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile	
(MOD)		Land mobile-satellite (Earth-to-space)	
		Radio Astronomy	
(MOD)		S5.149	
	14.5 – 14.8	FIXED FIXED-SATELLITE (Earth-to-space) S5.510 MOBILE Space Research	
	14.8 – 15.35	FIXED MOBILE Space Research S5.339	

NOC **S5.510** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe.

GHz
15.35 – 17.7

MOD

Allocation to Services		
Region 1	Region 2	Region 3
15.35 – 15.4	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340 S5.511	
15.4 – 15.7	AERONAUTICAL RADIONAVIGATION S5.511B FIXED-SATELLITE (space-to-Earth) S5.511A S5.511C	
15.7 – 16.6	RADIOLOCATION S5.512 S5.513	
16.6 – 17.1	RADIOLOCATION Space Research (deep space) (Earth-to-space) S5.512 S5.513	
17.1 – 17.2	RADIOLOCATION S5.512 S5.513	
17.2 – 17.3	RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) S5.512 S5.513	
17.3 – 17.7 FIXED-SATELLITE (Earth-to-space) S5.516 Radiolocation S5.514	**17.3 – 17.7** FIXED-SATELLITE (Earth-to-space) S5.516 BROADCASTING-SATELLITE Radiolocation S5.514 S5.515 S5.517	**17.3 – 17.7** FIXED-SATELLITE (Earth-to-space) S5.516 Radiolocation S5.514

MOD **S5.511** *Additional allocation:* in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, the Islamic Republic of Iran, Iraq, Israel, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Pakistan, Qatar, Syria, Slovenia, Somalia and Yugoslavia, the band 15.35 - 15.4 GHz is also allocated to the fixed and mobile services on a secondary basis.

ADD S5.511A Use of the band 15.4 - 15.7 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **S9.11bis**. Emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of -146 dB(W/m^2/MHz) in the bands 15.4 - 15.45 GHz and 15.65 - 15.7 GHz, and -111 dB(W/m^2/MHz) in the band 15.45 - 15.65 GHz, for all angles of arrival. These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions. In the band 15.45 - 15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed -146 dB(W/m^2/MHz) for all angles of arrival, it shall coordinate with affected administrations. Moreover, harmful interference shall not be caused to stations of the radio astronomy service using the band 15.35 - 15.4 GHz. The threshold levels of interference and associated power flux-density limits which are detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769. The power flux-density limits and coordination threshold in this footnote shall apply, subject to review by ITU-R and based on the studies referred to in Resolution COM5-4 (WRC-95), until changed by a future competent world radiocommunication conference.

ADD S5.511B Aircraft stations are not permitted to transmit in the band 15.45 - 15.65 GHz.

ADD S5.511C *Additional allocation:* the band 15.45 - 15.65 GHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. Such use is limited to feeder links of non-geostationary systems in the mobile-satellite service and is subject to coordination under No. **S9.11bis**. Until such time as the studies called for in Resolution COM5-6 are completed: 1) administrations operating stations in the aeronautical radionavigation service are urged to limit the average e.i.r.p. to 42 dBW; 2) stations in the fixed-satellite service shall not cause harmful interference to stations in the aeronautical radionavigation service (No. **S4.10** applies).

MOD **S5.512** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, the Islamic Republic of Iran, Jordan, Kuwait, The Former Yugoslav Republic of Macedonia, Libya, Malaysia, Malawi, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Sweden, Swaziland, Tanzania, Chad, Thailand, Yemen and Yugoslavia, the band 15.7 - 17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

NOC **S5.513** *Additional allocation:* in Israel, the band 15.7 - 17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **S5.512**.

NOC **S5.514** *Additional allocation:* in Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, The Former Yugoslav Republic of Macedonia, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan, Sweden, and Yugoslavia, the band 17.3 - 17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **S21.3** and **S21.5** shall apply.

NOC **S5.515** In the band 17.3 - 17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of section 1 of Annex 4 of Appendix **S30A**.

NOC **S5.516** The use of the band 17.3 - 18.1 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by the feeder links for the broadcasting-satellite service in the band 12.2 - 12.7 GHz, see Article **S11**.

NOC **S5.517** In Region 2, the allocation to the broadcasting-satellite service in the band 17.3 - 17.8 GHz shall come into effect on 1 April 2007. After that date, use of the fixed-satellite (space-to-Earth) service in the band 17.7 - 17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.

GHz
17.7 – 18.8

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td rowspan="2">17.7 – 18.1
FIXED
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.516
MOBILE</td><td>17.7 – 17.8
FIXED
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.516
BROADCASTING-SATELLITE
Mobile S5.518
S5.515 S5.517</td><td rowspan="2">17.7 – 18.1
FIXED
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.516
MOBILE</td></tr>
<tr><td>17.8 – 18.1
FIXED
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.516
MOBILE</td></tr>
<tr><td>18.1 – 18.4</td><td colspan="2">FIXED
FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.520
MOBILE
S5.519 S5.521</td></tr>
<tr><td>18.4 – 18.6</td><td colspan="2">FIXED
FIXED-SATELLITE (space-to-Earth)
MOBILE</td></tr>
<tr><td>18.6 – 18.8
FIXED
FIXED-SATELLITE (space-to-Earth) S5.523
MOBILE except aeronautical mobile
Earth Exploration-Satellite (passive)
Space Research (passive)
S5.522</td><td>18.6 – 18.8
EARTH EXPLORATION-SATELLITE (passive)
FIXED
FIXED-SATELLITE (space-to-Earth) S5.523
MOBILE except aeronautical mobile
SPACE RESEARCH (passive)
S5.522</td><td>18.6 – 18.8
FIXED
FIXED-SATELLITE (space-to-Earth) S5.523
MOBILE except aeronautical mobile
Earth Exploration-Satellite (passive)
Space Research (passive)
S5.522</td></tr>
</table>

MOD **S5.518** *Different category of service:* in Region 2, the allocation of the band 17.7 - 17.8 GHz to the mobile service is on a primary basis until 31 March 2007.

MOD **S5.519** *Additional allocation:* the band 18.1 - 18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article **S21**, Table [AR28].

NOC **S5.520** The use of the band 18.1 - 18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

MOD **S5.521** *Alternative allocation:* in Germany, Denmark, the United Arab Emirates, Greece, Poland, Slovakia, the Czech Republic and the United Kingdom, the band 18.1 - 18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis. The provisions of No. **S5.519** also apply.

NOC **S5.522** In making assignments to stations in the fixed and mobile services, administrations are invited to take account of passive sensors in the earth-exploration satellite and space research services operating in the band 18.6 - 18.8 GHz. In this band, administrations should endeavour to limit as far as possible both the power delivered by the transmitter to the antenna and the e.i.r.p. in order to reduce the risk of interference to passive sensors to the minimum.

NOC **S5.523** In assigning frequencies to stations in the fixed-satellite service in the direction space-to-Earth, administrations are requested to limit as far as practicable the power flux-density at the Earth's surface in the band 18.6 - 18.8 GHz, in order to reduce the risk of interference to passive sensors in the earth exploration-satellite and space research services.

GHz
18.8 – 22.21

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**18.8 – 19.3** FIXED FIXED-SATELLITE (space-to-Earth) S5.523D MOBILE		
MOD	**19.3 – 19.7** FIXED FIXED-SATELLITE (space-to-Earth) S5.523A (Earth-to-space) S5.523B MOBILE S5.523C		
	19.7 – 20.1 FIXED-SATELLITE (space-to-Earth) Mobile-Satellite (space-to-Earth) S5.524	**19.7 – 20.1** FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.524 S5.525 S5.526 S5.527 S5.528 S5.529	**19.7 – 20.1** FIXED-SATELLITE (space-to-Earth) Mobile-Satellite (space-to-Earth) S5.524
	20.1 – 20.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.524 S5.525 S5.526 S5.527 S5.528		
	20.2 – 21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal (space-to-Earth) S5.524		
	21.2 – 21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)		
	21.4 – 22 FIXED MOBILE BROADCASTING-SATELLITE S5.530	**21.4 – 22** FIXED MOBILE	**21.4 – 22** FIXED MOBILE BROADCASTING-SATELLITE S5.530 S5.531
	22 – 22.21 FIXED MOBILE except aeronautical mobile S5.149		

ADD S5.523A The use of the band 19.3 - 19.6 GHz (space-to-Earth) by GSO FSS systems and by the feeder links for non-geostationary satellite systems in the MSS is subject to the application of the provisions of Resolution **46 (Rev.WRC-95)/S9.11bis**, but not subject to the provisions of No. **S22.2**. The use of this band for other non-GSO FSS systems is not subject to the provisions of Resolution **46 (Rev.WRC-95)/S9.11bis** and shall continue to be subject to Articles **11** and **13** procedures (**S9** (except **S9.11bis**) and **S11**) and to the provisions of No. **S22.2**.

ADD S5.523B The use of the band 19.3 - 19.6 GHz (Earth-to-space) by the FSS is limited to feeder links for non-GSO systems in the MSS. Such use is subject to the application of the provisions of Resolution **46 (Rev.WRC-95)/S9.11bis**, and No. **S22.2** does not apply.

ADD S5.523C The use of the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz by the FSS shall be in accordance with Resolution PLEN-4.

ADD S5.523D The use of the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz by the FSS shall be in accordance with Resolution PLEN-1.

MOD **S5.524** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Sudan, Tanzania, Chad, Thailand, Togo, Tunisia and Zaire, the band 19.7 - 21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7 - 21.2 GHz and of space stations in the mobile-satellite service in the band 19.7 - 20.2 GHz where such allocation to the mobile-satellite service is on a primary basis in the latter band.

NOC **S5.525** In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz.

NOC **S5.526** In the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz in Region 2, and in the bands 20.1 - 20.2 GHz and 29.9 - 30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point-to-point and point-to-multipoint communications.

NOC **S5.527** In the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz, the provisions of No. **S4.10** do not apply with respect to the mobile-satellite service.

NOC **S5.528** The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7 - 20.1 GHz in Region 2 and in the band 20.1 - 20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. **S5.524**.

NOC **S5.529** The use of the bands 19.7 - 20.1 GHz and 29.5 - 29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. **S5.526**.

NOC **S5.530** In Regions 1 and 3, the allocation to the broadcasting-satellite service in the band 21.4 - 22 GHz shall come into effect on 1 April 2007. The use of this band by the broadcasting-satellite service after that date and on an interim basis prior to that date is subject to the provisions of Resolution **525 (WARC-92)**.

NOC **S5.531** *Additional allocation:* in Japan, the band 21.4 - 22 GHz is also allocated to the broadcasting service on a primary basis.

GHz
22.21 – 24.05

Allocation to Services		
Region 1	Region 2	Region 3
22.21 – 22.5	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) S5.149 S5.532	
22.5 – 22.55	FIXED MOBILE	
22.55 – 23	FIXED INTER-SATELLITE MOBILE S5.149	
23 – 23.55	FIXED INTER-SATELLITE MOBILE S5.149	
23.55 – 23.6	FIXED MOBILE	
23.6 – 24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	
24 – 24.05	AMATEUR AMATEUR-SATELLITE S5.150	

NOC S5.532 The use of the band 22.21 - 22.5 GHz by the earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.

GHz
24.05 – 25.5

Allocation to Services		
Region 1	Region 2	Region 3
24.05 – 24.25	RADIOLOCATION Amateur Earth Exploration-Satellite (active) S5.150	
24.25 – 24.45 FIXED	**24.25 – 24.45** RADIONAVIGATION	**24.25 – 24.45** RADIONAVIGATION FIXED MOBILE
24.45 – 24.65 FIXED INTER-SATELLITE	**24.45 – 24.65** INTER-SATELLITE RADIONAVIGATION S5.540	**24.45 – 24.65** FIXED INTER-SATELLITE MOBILE RADIONAVIGATION S5.540
24.65 – 24.75 FIXED INTER-SATELLITE	**24.65 – 24.75** INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)	**24.65 – 24.75** FIXED INTER-SATELLITE MOBILE S5.540 S5.541
24.75 – 25.25 FIXED	**24.75 – 25.25** FIXED-SATELLITE (Earth-to-space) S5.542	**24.75 – 25.25** FIXED FIXED-SATELLITE (Earth-to-space) S5.542 MOBILE S5.541
25.25 – 25.5	FIXED INTER-SATELLITE S5.533 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	

GHz
25.5 – 29.9

Allocation to Services		
Region 1	Region 2	Region 3
25.5 – 27	FIXED INTER-SATELLITE S5.533 MOBILE Earth Exploration-Satellite (space-to-Earth) Standard Frequency and Time Signal-Satellite (Earth-to-space)	
27 – 27.5 FIXED INTER-SATELLITE S5.533 MOBILE	**27 – 27.5** FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE S5.533 S5.534 MOBILE	
27.5 – 28.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.539 MOBILE S5.536 S5.537	
MOD **28.5 – 29.1**	FIXED FIXED-SATELLITE (Earth-to-space) S5.539 S5.523D MOBILE Earth Exploration-Satellite (Earth-to-space) S5.538 S5.537	
MOD **29.1 – 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) S5.523C S5.535A S5.535B S5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) S5.538 S5.537	
29.5 – 29.9 FIXED-SATELLITE (Earth-to-space) S5.539 Earth Exploration-Satellite (Earth-to-space) S5.538 Mobile-Satellite (Earth-to-space) S5.537 S5.543	**29.5 – 29.9** FIXED-SATELLITE (Earth-to-space) S5.539 MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) S5.538 S5.525 S5.526 S5.527 S5.529 S5.537 S5.543	**29.5 – 29.9** FIXED-SATELLITE (Earth-to-space) S5.539 Earth Exploration-Satellite (Earth-to-space) S5.538 Mobile-Satellite (Earth-to-space) S5.537 S5.543

GHz
29.9 – 31.8

Allocation to Services		
Region 1	Region 2	Region 3
29.9 – 30	FIXED-SATELLITE (Earth-to-space) S5.539 MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) S5.538 S5.525 S5.526 S5.527 S5.535 S5.536 S5.537 S5.543	
30 – 31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) S5.543	
31 – 31.3	FIXED MOBILE Standard Frequency and Time Signal-Satellite (space-to-Earth) Space Research S5.544 S5.149 S5.545	
31.3 – 31.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	
31.5 – 31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile S5.149 S5.546	**31.5 – 31.8** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) S5.340	**31.5 – 31.8** EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile S5.149

NOC **S5.533** Use of the 25.25 - 27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.

NOC **S5.534** Space services using non-geostationary satellites operating in the inter-satellite service in the band 27 - 27.5 GHz are exempt from the provisions of No. **S22.2**.

NOC **S5.535** The band 29.95 - 30 GHz may be used for space-to-space links in the earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.

ADD S5.535A The use of the band 29.1 - 29.4 GHz (Earth-to-space) by the FSS is limited to GSO satellite systems and feeder links to non-GSO satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of Resolution **46 (Rev.WRC-95)/S9.11bis** and No. **S22.2** does not apply.

ADD S5.535B Feeder links of non-GSO MSS networks and GSO FSS networks operating in the band 29.1 - 29.4 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which AP S4 coordination information is considered as having been received by the BR after 17 May 1996 and until it is changed by a future competent world radiocommunication conference. Administrations submitting AP S4 information for coordination before this date are encouraged to utilize these techniques to the extent practicable. These methods are also subject to review by the ITU-R (see Resolution COM5-7).

NOC **S5.536** *Additional allocation:* the bands 27.500 - 27.501 GHz and 29.999 - 30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. In the band 27.500 - 27.501 GHz, such space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article **S21**, Table [AR28] on the Earth's surface.

NOC **S5.537** *Additional allocation:* the band 27.501 - 29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.

NOC **S5.538** In the band 28.5 - 30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.

NOC **S5.539** The band 27.5 - 30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

NOC **S5.540** The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.

NOC **S5.541** *Additional allocation:* in Japan, the band 24.65 - 25.25 GHz is also allocated to the radionavigation service on a primary basis until 2008.

NOC **S5.542** In the band 24.75 - 25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.

MOD **S5.543** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, the Islamic Republic of Iran, Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Pakistan, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Chad and Thailand, the band 29.5 - 31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **S21.3** and **S21.5** shall apply.

NOC **S5.544** In the band 31 - 31.3 GHz the power flux-density limits specified in Article **S21**, Table [AR28] shall apply to the space research service.

MOD **S5.545** *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakhstan, Moldova, Mongolia, Poland, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31 - 31.3 GHz to the space research service is on a primary basis (see No. **S5.33**).

MOD **S5.546** *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31.5 - 31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **S5.33**).

GHz
31.8 – 37

	Allocation to Services		
	Region 1	Region 2	Region 3
	31.8 – 32	RADIONAVIGATION	
		SPACE RESEARCH (deep space) (space-to-Earth)	
MOD		S5.548	
	32 – 32.3	INTER-SATELLITE	
		RADIONAVIGATION	
		SPACE RESEARCH (deep space) (space-to-Earth)	
MOD		S5.548	
	32.3 – 33	INTER-SATELLITE	
		RADIONAVIGATION	
MOD		S5.548	
	33 – 33.4	RADIONAVIGATION	
MOD			
	33.4 – 34.2	RADIOLOCATION	
MOD		S5.549	
	34.2 – 34.7	RADIOLOCATION	
		SPACE RESEARCH (deep space) (Earth-to-space)	
		S5.549	
	34.7 – 35.2	RADIOLOCATION	
		Space Research S5.550	
		S5.549	
	35.2 – 36	METEOROLOGICAL AIDS	
		RADIOLOCATION	
		S5.549 S5.551	
	36 – 37	EARTH EXPLORATION-SATELLITE (passive)	
		FIXED	
		MOBILE	
		SPACE RESEARCH (passive)	
		S5.149	

SUP **S5.547**

NOC **S5.548** In designing systems for the inter-satellite and radionavigation services in the band 32 - 33 GHz, and for the space research service (deep space) in the band 31.8 - 32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707 (WARC-79)**).

MOD **S5.549** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Spain, Gabon, Guinea, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Tanzania, Thailand, Togo, Tunisia, Yemen and Zaire, the band 33.4 - 36 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD **S5.550** *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 34.7 - 35.2 GHz to the space research service is on a primary basis (see No. **S5.33**).

NOC **S5.551** Radars located on spacecraft may be operated on a primary basis in the band 35.5 - 35.6 GHz.

GHz
37 – 42.5

Allocation to Services		
Region 1	Region 2	Region 3
37 – 37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth)	
37.5 – 38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth Exploration-Satellite (space-to-Earth)	
38 – 39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth)	
39.5 – 40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite (space-to-Earth)	
40 – 40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth Exploration-Satellite (space-to-Earth)	
40.5 – 42.5	BROADCASTING-SATELLITE BROADCASTING Fixed Mobile	